

## National Rail Trends

### Proposed Public Performance Measure Revision

#### Summary

This document provides details of proposed revisions to the Public Performance Measure (PPM) time series used as the basis of the Public Performance Measure National Rail Trends (NRT) Reports. Following the ORR being made aware of discrepancies in PPM sector figures for the years prior to 2002/03 a full review of the PPM time series published in the National Rail Trends has been conducted. This review identified a number of issues with the sources and calculation of PPM and PPM MAA values for the period prior to 2002/03. Resultantly it has been decided that a new time series calculated from a single data source, provided by Network Rail, with more detail and a greater level of disaggregation will be used to form the basis of the PPM NRT reports.

#### Reports affected

The following official statistic reports contained the identified errors:

- Public Performance Measure (MAA) by sector – chart;
- Public Performance Measure by sector – table;

The following official statistics reports will be affected by the revision:

- Public Performance Measure (MAA) by sector – chart;
- Public Performance Measure by sector – table;
- Public Performance Measure by TOC – chart;
- Public Performance Measure by TOC – table; and
- Key Stats by TOC.

#### Identified discrepancies

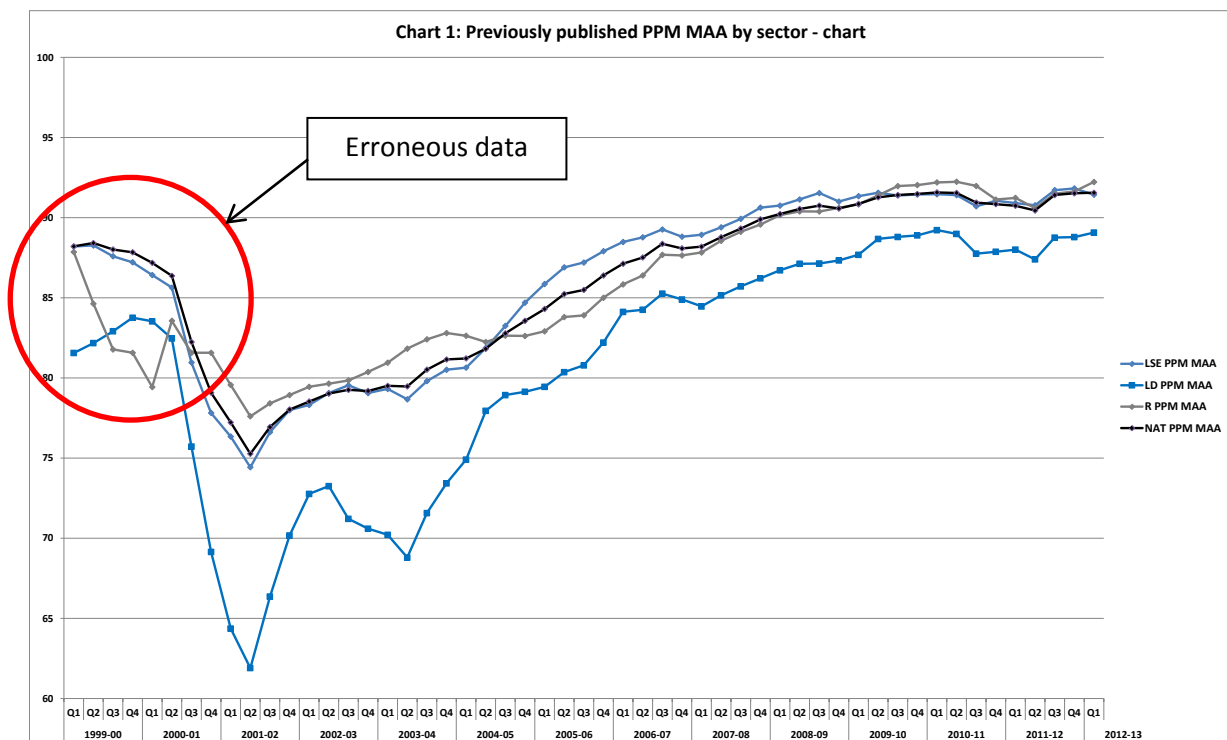
The discrepancies were identified in the PPM (MAA) by sector – chart and PPM by sector – table published before 2012/13 Q2 and relate to the sector quarterly and MAA PPM figures for the period from 1997/98 to 2001/02. The NRT 2012/13 Q2 Public performance measure (PPM) by sector – table, and Public performance (PPM) moving annual average (MAA) by sector – chart reports published on the ORR data portal on 22nd November 2012 used correct data.

It was identified that annual data in the public performance measure by sector table did not match the data used to create the chart, which is created from quarterly MAA data. The quarterly MAA data for Q4 within any year should match the annual MAA figure for that year. Table 1 below presents the annual MAA data by sector which created the table and the Q4 MAA values from the chart data.

Table 1: Table annual MAA data and chart Q4 MAA data

	Long-Distance			LSE			Regional			All Franchised		
	Table	Chart	Diff	Table	Chart	Diff	Table	Chart	Diff	Table	Chart	Diff
1997-98	81.7	81.725	0.03	89.6	86.875	2.73	90.6	90.7	0.10			
1998-99	80.6	80.6	0.00	87.9	85.35	2.55	88.6	88.6	0.00			
1999-00	83.8	83.7553	0.05	87.1	87.2119	0.11	89.1	81.5695	7.53			
2000-01	69.1	69.1436	0.04	77.6	77.8102	0.21	81.7	81.5695	0.13			
2001-02	70.2	70.1704	0.03	77.8	77.9888	0.19	79.1	78.9319	0.17			
2002-03	70.5934	70.5934	0.00	79.0565	79.0565	0.00	80.3683	80.3683	0.00	79.1849	79.1849	0.00
2003-04	73.4226	73.4226	0.00	80.5089	80.5090	0.00	82.8003	82.8003	0.00	81.1565	81.1531	0.00
2004-05	79.1343	79.1343	0.00	84.6952	84.6953	0.00	82.6151	82.6152	0.00	83.5485	83.5612	0.01
2005-06	82.2085	82.2085	0.00	87.9041	87.9041	0.00	85.0046	85.0046	0.00	86.3847	86.3908	0.01
2006-07	84.8935	84.8936	0.00	88.8103	88.8103	0.00	87.6404	87.6404	0.00	88.0785	88.0785	0.00
2007-08	86.2126	86.2126	0.00	90.6220	90.6220	0.00	89.5706	89.5706	0.00	89.8924	89.8924	0.00
2008-09	87.3307	87.3307	0.00	91.0034	91.0034	0.00	90.6063	90.6064	0.00	90.5681	90.5681	0.00
2009-10	88.8922	88.8926	0.00	91.4448	91.4433	0.00	92.0304	92.0304	0.00	91.4755	91.4748	0.00
2010-11	87.8554	87.8689	0.01	91.0531	91.0578	0.01	91.1261	91.1261	0.00	90.8370	90.8406	0.00

It can be seen that the largest discrepancies are within the regional sector data with the 1999/2000 MAA table figure being 7.53 percentage points greater than the chart figure. The other discrepancies during the period reveal 1 or 2 tenths difference between the two sets. These discrepancies are further revealed in the previously published PPM MAA by sector chart.



It is noticeable that for the period between 1998-99 Q1 and 1999-00 Q3 the line for all franchised operators is above that of all its constituent parts, the sectors, which is not mathematically possible. It is also noticeable that the regional line for this period is more volatile than the other sectors.

The reason for these discrepancies is that during 2005 the data for this period was revised, however, because the NRT yearbooks published at the time and since did not publish, within the table, the time series going back to 1997-98 the revisions were not ever picked up by any published documents. For 2012-13 Q1 the ORR published the full PPM MAA time series, including pre 2002-03 data, which combined data from a number of different sources. The unpublished revisions were not picked up and instead the previously published unrevised data was used.

It should also be noted that data for 2004-05 onward has been provided by Network Rail at a quarterly level, rather than the periodic data which was received for pre 2004-05. This periodic data required the application of apportionment factors, which were based on an inter-process, to create quarterly values. The inter-process split each period into 13 sub-periods and, using trends from previous periodic data, would forecast the profile for number of trains within PPM. The quarterly data would then be calculated from this trended profile.

### **Proposed revised PPM time series**

The discrepancies described above can be corrected by using the previously unpublished revised data for the period 1997/98 through to 2002/03. However, this would still involve using data from a number of different sources, which cover different parts of the time series and have been calculated using slightly different methodologies, to create one overall time series which provides its own obstacles and the possibility of errors occurring.

Therefore future NRT publications which use the PPM measure (both quarterly and MAA values) are going to be created using a single data source covering the whole time series from 1997/98 to the present. This single data source is a new data file received from Network Rail which provides much greater disaggregation and detail of performance data, including the underlying raw data, trains planned and PPM passes, from which PPM values have been calculated by Network Rail. This data is refreshed and received on a periodic basis.

The new PPM time series will be created from the underlying raw data within the file with periodic data apportioned to quarters based on the proportion of days falling within each quarter. The table below provides an example of how the apportionment is applied, with 2012/13 used as the example.

Table 2: Apportionment of periodic data to quarters – 2012/13

	Dates	Quarterly Apportionment
2012/13 P01	01/04/2012–28/04/2012	Q1
2012/13 P02	29/04/2012-26/05/2012	Q1
2012/13 P03	27/05/2012-23/06/2012	Q1
2012/13 P04	24/06/2012-21/07/2012	7/28 to Q1, 21/28 to Q2
2012/13 P05	22/07/2012-18/08/2012	Q2
2012/13 P06	19/08/2012-15/09/2012	Q2
2012/13 P07	16/09/2012-13/10/2012	15/28 to Q2, 13/28 to Q3
2012/13 P08	14/10/2012-10/11/2012	Q3
2012/13 P09	11/11/2012-08/12/2012	Q3
2012/13 P10	09/12/2012-05/01/2013	23/28 to Q3, 5/28 to Q4
2012/13 P11	06/01/2013-02/02/2013	Q4
2012/13 P12	03/02/2013-02/03/2013	Q4
2012/13 P13	03/03/2013-31/03/2013	Q4

It should be noted that quarterly figures from other sources may differ slightly to published ORR data because of the difference in apportionment methodology, for example Network Rail are able to use daily data to create quarterly figures.

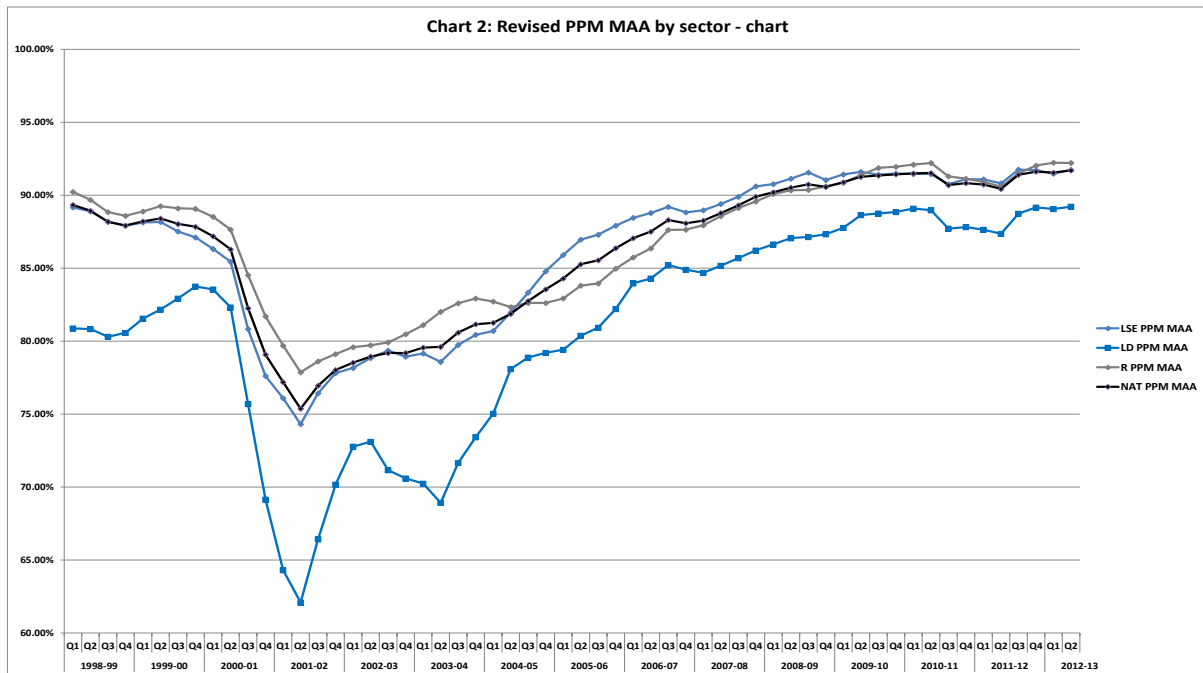
To compare the proposed time series to the previously published PPM data the average absolute difference between PPM and PPM MAA data for the sectors has been calculated. The table below presents the calculated average absolute difference for the period from 2002/03 onward, because the previously detailed errors in the previously published data for the preceding time would skew the average absolute difference figures.

Table 3: Average absolute difference between currently published data and revised time series

	Average absolute difference 2002/03 onwards		
	Quarterly PPM	Quarterly PPM MAA	Annual PPM MAA
Franchised LD	0.220pp	0.076pp	0.022pp
Franchised LSE	0.184pp	0.065pp	0.052pp
Franchised Regional	0.190pp	0.087pp	0.043pp
Franchised National	0.161pp	0.038pp	0.009pp

It can be seen from Table 3 that the proposed time series will result in revisions to the PPM MAA values, for the period from 2002/03 onwards, of an average of less than a tenth of a percentage point. The largest average revisions will be for the regional sector for the Quarterly PPM MAA values, whilst annual PPM MAA values will see the smallest average revisions.

The chart below demonstrates how the MAA quarterly chart will look with the proposed new time series.



## Conclusions

Following the identification of discrepancies in the PPM time series used to create the PPM NRT reports a review of the time series has been undertaken. The discrepancies have occurred due to data revisions not being picked up and the use of differing sources and methodologies for different sections of the time series.

Following this review it has been decided that a new time series should be created from a single data source which cover the whole of the period from 1997/98 onwards. The advantages of the new time series will be:

- it is created using a single methodology and source, rather than the 3 methodologies used previously;
- improved traceability of the data; and
- TOC key stats can be presented back to 1997/98 rather than the 2004/05.

## Publication of revised PPM time series.

The following 2012/13 Q3 reports using the revised time series are due to be published on 28<sup>th</sup> February 2013:

- Public performance measure (PPM) moving annual average (MAA) by sector – chart;
- Public performance measure (PPM) by train operating company – chart;
- Public performance measure (PPM) by train operating company – table; and
- Public performance measure (PPM) by sector – table.